

S/133/61/000/012/004/006  
A054/A127

The effect of the production technology on the....

as consumable electrodes. This method proved less efficient than electroslag remelting. The ingots subjected to this process have to be roughed before forging, in the same way as the conventional ingots, while this is not necessary for ingots remelted by the electroslag process. The chemical composition of EI847 steel after vacuum remelting only changed in such a way that some silicon, niobium and manganese cinder was formed, whereas after electroslag remelting there is some sulfur and silicon cinder. The silicon content decreased in the various heats by about 0.05 - 0.15%. The niobium-carbon ratio is at least 8 in the steel produced by the various methods tested and electroslag remelting. This ratio ensures a high resistance to intergranular corrosion when checked according to the AM(AM) method [ГОСТ 6032-58 (GOST 6032-58)]. As to nonmetallic inclusions the purest grade was obtained when smelting a fresh charge with rimming and deoxidizing with aluminum powder under white slag and by adding niobium in the form of a nickel-niobium master alloy or ferro-niobium with a low silicon content, followed by electroslag remelting. The amount of nonmetallic inclusions decreased in this way by a factor of 1.5 - 4. The technological ductility of EI847 steel increased when casting took place under the conditions described above. An additional reduction of the bath at the end of the refining period by metallic calcium increases the amount of brittle silicate

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and globular inclusions, but, at the same time also raises the steel ductility at high temperatures (this is contrary to the general opinion that inclusions lower the steel ductility). The highest degree of ductility in hot deformation (torsion) can be obtained in steel remelted with ANF-1P slag and a test slag containing 30%  $Al_2O_3$ , 30%  $CaO$  and 40%  $CaF_2$ . Vacuum-remelted steel is more ductile at 1,000 - 1,100°C than steel produced by electroslag remelting, at 1,150°C the ductility is about the same for both kinds of steel, while at higher temperatures the ductility of vacuum steels decreases and that of electroslag-remelted steels does not change up to 1,300°C. The electroslag remelting tests were carried out by S.A. Leybenzon, Engineer ("Dneprospetsstal" Plant) and B. I. Medovar, Doctor of Technical Sciences, Yu.V. Latash, Candidate of Technical Sciences and B.I. Maksimovich, Engineer [Institut elektrosvarki im. Ye.O. Patona (Electric Welding Institute im. Ye.O. Paton)]. There are 5 figures, 4 tables and 3 Soviet-bloc references.

ASSOCIATION: Zavod "Elektrostal'" ("Elektrostal'" Plant)

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S/133/61/000/006/013/017  
A054/A129

AUTHORS: Vinograd, M. I., Candidate of Technical Sciences, Goncharenko, M.S.  
(Deceased), Doronin, V. M., Topilin, V. V., Chernina, B. G.,  
Engineers

TITLE: Improving the technology of 3M347 (EI347) ball bearing steel ✓

PERIODICAL: Stal', no. 6, 1961, 543-546

TEXT: In the structure of the EI347 type steel used in 1956-57 for the production of rings of 100 mm in diameter produced from steel sections or disks, made of 200-300-kg ingots the ledeburite was not sufficiently divided, moreover, the amount of non-metallic inclusions was found to be too high. In order to improve the technology of this steel grade, tests were carried out with the cooperation of Candidate of Technical Sciences A. S. Sheyn, Engineers V. N. Gorskiy, V. P. Arkhipova, Ye. V. Laguntsova, S. A. Kiseleva, V. Ya. Rybakova, Technicians I. N. Bystrikova, Ye. P. Burdyukina, and I. P. Solodikhin. In all tests smelting took place by blowing oxygen through the bath and by bottom casting. The ladles were made of fireclay or mullite, the weight of the ingots was 300, 500 and 750 kg, from which billets 80 x 80 - 90 x 90 mm in size were made.

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Improving the technology of  $\text{ЖВ347}$  (EI347) ...

The samples cut from strips 10-12 mm thick taken from the billets were heated in a salt bath to  $1,220^{\circ} \pm 10^{\circ}\text{C}$  with 2 min 30 sec. holding time and annealed at  $680^{\circ} - 700^{\circ}\text{C}$  for 1 hour, then cooled on air. The following six variants were tested (Table 1). Table 2 shows that the steel had the lowest percentage of non-metallic inclusions when the charge consisted of 35-60% high-speed steel scraps, 30-50%  $\text{ШХ15}$  (ShKh15) steel waste, with the addition of 5-10% ferroalloys. In order to assess the effect of the ladle lining on the impurities, variant II was poured in a chamotte ladle, variant V in a mullite ladle and variant VI in a ladle lined with smooth ("planed") mullite. The best results were obtained with the mullite-lined ladle, the worst results with the ladle lined with smooth high-silicon bricks. It was established concerning the temperature that least siliceous and globular inclusions were found in the steel cast at  $1,570^{\circ} - 1,600^{\circ}\text{C}$ . The cleanest zone in the 500-kg and 750-kg ingots is that under the riser head, whereas the part containing most impurities was found in the center of the ingot. In order to obtain the required degree of non-uniformity in carbide structure of the steel, 750-kg ingots have to be used for the disks and 500-750-kg ingots for sectional steel 60-80 mm in diameter, while 300-kg ingots must be taken for sections with smaller diameter. In order to remove the surface defects, the ingots had to be cleaned to a depth of 5-8 mm. By applying this new

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Improving the technology of EI347 (EI347) ...

technology for EI347 grade steels, the waste in the finished product was less than 2%. There are 3 figures and 4 tables.

ASSOCIATION: TsNIChM and zavod  
"Elektrostal'" (Elektrostal'  
Plant)

| parameters<br>Показатели  | Номер варианта<br>Number of variant |       |       |       |       |         |
|---|-------------------------------------|-------|-------|-------|-------|---------|
|   | I                                   | II    | III   | IV    | V     | VI      |
| Состав шихты, %<br>отходы сталей:                               |                                     |       |       |       |       |         |
| 1 быстрорежу-<br>щей . . .                                      | 25-30                               | 45-50 | 10-20 | 20-25 | 35-60 | 35-40   |
| 2 ШХ15 . . .  | 25-30                               | 40-45 | 40-45 | 40-45 | 35-50 | 35-45   |
| 3 вольфрам-<br>стые* ших-<br>товые слитки                       | 15-20                               | —     | 30-40 | —     | —     | —       |
| 4 мягкое железо   | 15-20                               | —     | —     | 15-20 | —     | 10-15** |
| 5 ферросплавы   | 5-10                                | 5-10  | 5-10  | 10-15 | 5-10  | 10-15   |
| 6 футеровка ков-<br>шей*** . . .                                | Ш                                   | Ш     | М     | М     | М     | МС      |
| 7 Количество пла-<br>вок, разлитых<br>на слитки ве-<br>сом, кг: |                                     |       |       |       |       |         |
| 300 . . . . .   | —                                   | —     | —     | 2     | —     | —       |
| 500 . . . . .   | 4                                   | 1     | 2     | —     | 3     | —       |
| 750 . . . . .   | 4                                   | 6     | 4     | 8     | 10    | 10      |

Table 1: Variants of smelting and pour-  
ing EI347 grade steel:

Legend: 1 - composition of the charge,  
%; 2 - scraps of high-speed steel;  
3 - steel, ShKh15; 4 - tungsten-steel\*  
ingots, 5 - soft iron; 6 - ferro-alloys;  
7 - lining of the ladle\*\*\*; 8 - number  
of castings, (ingots) having a weight  
of, kg.; \* Approximate composition:  
0.76% C; 0.25% Si; 0.28% Mn; 0.03% S;  
0.03% P; 2.4% Cr; 9.55% W; 0.70% V;  
0.19% Mo; \*\* Including 8% of 1Kh13 steel;  
\*\*\* Ш = Sh: chamotte; М = M: mullite;

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3/125/61/000/001/008/016  
A161/A133

AUTHORS: Vorob'yev, Yu.K., Doronin, V.M., Klyuyev, M.M., Topilin, V.V.,  
Shiryayev, N.A., Voynovskiy, Ye.V., Medovar, B.I., Latash, Yu.V.  
Maksimovich, B.I.

TITLE: The effect of electro-slag remelting on the quality of chrome-  
nickel molybdenum 3M 847 (EI847) steel

PERIODICAL: Avtomaticheskaya svarka, no. 1, 1961, 52-56

TEXT: The authors present the results of experiments carried out with arc  
furnace, vacuum furnace, and electro-slag processes. The chemical composi-  
tion of the EI847 grade steel is (%): 0.10-0.15 C, 14-17 Cr, 14-16 Ni, 2.5-  
3.5 Mo, 0.45-0.85 Nb, not over 0.8 Si, 0.8 Mn, 0.02 S and 0.03 P. It is  
austenitic, is used mainly for seamless pierced and rolled tubes, and the  
ductility at high temperature is of primary importance. The austenitic  
structure of this steel is not subjected to  $\gamma \rightarrow \alpha$  transformation at high  
cold deformation or any heat treatment. The surplus component is carboni-

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A161/A133

The effect of electro-slag remelting ...

tride. Cubic  $\text{Cr}_{23}\text{C}_6$  carbide and the intermetallic  $\text{MoFe}_2$  phase were revealed along with Nb carbonitride by X-ray analysis after long aging at  $600-700^\circ\text{C}$ . Aging for 500-7,000 hours at  $550-700^\circ$  does not cause any tendency to inter-crystalline corrosion when EI847 steel is preliminarily hardened. The 100-hour strength limit for hardened EI847 steel is  $25 \text{ kg/mm}^2$  at  $650^\circ$ , and  $30 \text{ kg/mm}^2$  at  $600^\circ$ . In the tests electro-slag remelting was carried out in a  $\rho$ -909 (R909) unit, in a 250 mm diameter crystallizer; the consumable electrodes were forged rods 140 mm in diameter, cleaned with emery wheel. No defects of any kind were found in ingots prepared by electro-slag remelting (Fig.2). Ingots produced by arc remelting in the vacuum were nearly as sound. The presence of globular inclusions is apparently due to the high contamination of the initial metal before remelting. The steel produced by electro-slag and vacuum remelting had a higher ductility than steel melted by any arc furnace process (Fig.4); electro-slag remelted steel was less subject to overheating (its ductility remained at same level up to  $1,300^\circ\text{C}$ ). Conclusions: 1) Purest (from nonmetallic inclusions) EI847 steel melted in arc furnaces was obtained in the process with a fresh charge with rimming and slag deoxidation by aluminum powder, and by employing Ni-Nb alloys, or ferroniobium with a low Si content. This process ensures the best ductility of the steel

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The effect of electro-slag remelting ...

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A161/A133

at high and ordinary temperatures. 2) If very high purity is required the EI847 steel must be melted using either the electro-slag or vacuum arc remelting with consumable electrodes. Both these methods result also in the highest technological ductility. 3) Ingots produced with the electro-slag process differ from ordinary ingots by a more dense structure, absence of pipes, loose center structure, segregation and other defects. 4) The ultimate strength of EI847 steel slightly decreases after electro-slag remelting, and the yield limit increases. The higher yield limit is due to a decreased dendritic heterogeneity owing to the particular crystallization conditions in water-cooled copper ingot molds. There are 4 figures.

ASSOCIATION: Ordena Lenina zavod "Elektrostal'" im.I.F.Tevosyana (Order of Lenin "Elektrostal" Plant im.I.F.Tevosyan) - Yu.K. Vorob'yev, V.M. Doronin, M.M. Klyuyev, V.V. Topilin, N.A. Shiryayev, Ye. V. Voynovskiy; Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im.Ye.O.Patona ("Order of the Red Banner of Labor" Electric Welding Institute im.Ye.O.Paton AS UkrSSR) - B.I. Medovar, Yu.V. Latash and B.I. Maksimovich

Card 3/53

KLIUEV, M.M. [Klyuyev, M.M.]; TOPILIN, V.V.

Influence of electric remelting in the slag of very richly-alloyed steels and alloys for the purpose of eliminating non-metallic inclusions. Analele metalurgie 16 no.4:64-74 O-D '62.

1.2300  
AUTHORS:

Klyuyev, M.M., Topilin, V.V.,  
D.P., and Doronin, V.M.

34463  
S/125/62/000/003/008/008  
D040/D113  
Voynovskiy, Ye.V., Rozanov,

TITLE:

An investigation of optimum conditions for eliminating oxygen  
and oxide inclusions in electro-slag remelting.

PERIODICAL: Avtomaticheskaya svarka, no. 3, 1962, 86-87

TEXT: The effect of shielding of the slag pool and the end of the consumable  
electrode, the electrode surface state, and the use of fresh and spent slag  
on the elimination of oxygen and inclusions in electro-slag remelting, was  
studied on heat-resistant  $\text{ЭП 65}$  (3H 961Ф) [EP65 (EI961F)] steel. Ingots,  
1200-1250 kg in weight and 425 mm in diameter, were cast in an P-951 (R-951)  
unit. Remelting was tried with fresh and used ANФ-6 (ANF-6) fluxes, with  
scale-coated and scale-free electrodes. Shielding by nitrogen and carbon  
tetrachloride with and without a lid on the mold was also used. Best re-  
sults were obtained with scale-free electrodes, fresh slag with a low con-

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D040/D113

An investigation ...

tent of nondurable oxides ( $\text{SiO}_2$ ,  $\text{FeO}$ ,  $\text{Cr}_2\text{O}_3$ ,  $\text{MnO}$ ) and shielding of the slag  
pool. Best shielding results were obtained with a lid on the mold. The  
oxygen content was reduced from 0.005% in the electrode to an average of  
0.003% in the ingot after remelting; the content of oxide and silicate in-  
clusions dropped by slightly over 50%. Introductions of nitrogen under the  
shielding lid further reduced the oxygen content from 0.005 to 0.002%, and  
the content of inclusions dropped correspondingly. It was stated that the  
top of electro-slag ingots, consisting of metal solidified after the furnace  
has been switched off, contained more oxygen than the tail portion where the  
oxygen content was 2-2.5 times less than in the initial metal. The use of  
spent slags for remelting EP65 steel does not help to eliminate oxygen and  
results in more globular inclusions. The composition of nonmetallic in-  
clusions in comparison to the initial metal and through the height of  
electro-slag ingots, is different due to increased content of silica, iron  
oxides, chromium and manganese, and reduced alumina content. Metal remelted  
by electro-slag process with the use of the investigated shielding methods  
had plasticity and impact strength in tests of longitudinal and

An investigation ...

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D040/D113

particularly transverse specimens, as well as less anisotropic mechanical properties. It was stated that the impact strength of metal, particularly in transverse specimens, increased with diminishing content of oxide inclusions. [Abstracter's note: Complete translation].

✓

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S/142/62/000/001/005/015  
E111/2435

Influence of electro-slag ...

two nickel-base heat resisting alloys of unspecified composition were also treated. Depending on the type of steel, mould diameters were 150, 250, 300, 425 mm, giving ingot weights of 100, 350, 700 and 1300 kg, respectively. Slags used were: AHΦ-6 (ANF-6) (30 to 40%  $Al_2O_3$ , 60 to 70%  $CaF_2$ ); AHΦ-17 (ANF-1P) (95%  $CaF_2$ , up to 5%  $CaO$ );  $CaF_2$  (98% pure) and AH-29 (AN-29) (55%  $Al_2O_3$ , 45%  $CaO$ ). The slag utilization coefficient (ratio of weight of metal remelted to weight of slag used) remained practically constant at 22 to 25.. In some experiments protection for the electrode tip and the slag surface was provided by a lid, with or without an inert-gas stream. The original and remelted materials in the forged or rolled state were subjected to metallographic investigation; deformed metal was also used to prepare specimens for electrochemical solution and gas analysis. Oxidation was found to be an important factor in the effectiveness of inclusion elimination, e.g. with type ЭП65 (EP65) and 200 mm electrode diameter, the original inclusion number was 1.62, the inclusion number after remelting without any protection. ✓

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Influence of electro-slag ...

S/148/62/CCC/001/005/015  
E111/E435

with protection by only a lid over the mould and with protection by a lid and nitrogen being 1.71, 1.25 and 1.08 respectively. The first effect of protection was found to be a decrease in contamination by globular inclusions of the metal easiest to oxidize by atmospheric oxygen. Re-use of slags, if their silica and iron-oxide contents are high, leads to an increase in globular inclusions and oxygen content in the remelted metal and reduced elimination of oxide inclusions: under such conditions oxygen can be transferred to the slag/metal boundary and this explains the increase in non-metallic inclusions up to the remelted ingot. When a heat-resisting alloy with 2% Ti was remelted the silica content decreased, that of titanium nitride increased. With the ЭИ (EI) steels the silica and iron-, chromium- and manganese-oxides contents increased, that of alumina decreased. With steels ОХ18Н9 (OKH18N9), ЭИ847 (EI847) and ЭИ851 (EI851), when there is very little oxidation of the electrode, purification with ANF-1P is greater than with ANF-6 slag. This is due to the different conditions for flotation of the non-metallic inclusions. [Abstractor's note: Details not given.] Slag composition was

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Influence of electro-slag ...

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E111/E435

found also to affect the remelting rate: with OKh12N9 steel the rates with ANF-1P were 85 and 100 kg/hour (0.202 and 0.244 m/hour) the corresponding figures for EI247 being 90 and 112 (0.220 and 0.270) and for ШХ15СГ (ShKh15SG) (according to previous work by the authors and others) 102 and 135 (0.246 and 0.326); for this last mentioned steel rates of 182 (0.440) were obtained with A' 29 slag. Engineers V.M.Doronin, D.P.Rozanov, Ye.v.Voynovskiy, L.M.Perepelitsa as well as Laboratory assistants I.N.Bystroкова and L.M.Babkina participated in the work. There are 5 figures, 5 tables and 11 Soviet-bloc references.

ASSOCIATION: Zavod "Elektrostal'" ("Elektrostal'" Works)

SUBMITTED: September 1, 1961

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S/125/62/000/005/006/010  
D040/D113

Drop transfer of electrode metal in electroslag....

drops with molten slag is much greater than the contact surface area in arc steel furnaces. It appeared that electrodynamic forces (pinch effect) and surface tension have the strongest effect on drop transfer, and that these forces increase with increasing electrode diameter; this explains why the weight of drops only slightly depended on the slag bath depth. Drops were fixed on armco iron electrodes, 90 mm in diameter, and the content of Si and S was determined in the drops, the electrode and the remelted metal. It is assumed that Si may oxidize during drop formation, and that S separates from the metal later. Conclusions: (1) Metal drop transfer from electrodes of all diameters up to 200 mm and in all studied process variations was observed. (2) The drop size increased with increasing  $Al_2O_3$  content in the flux of the  $CaF_2-Al_2O_3$  system, as well as with electromagnetic rotation of the slag and metal bath, and it did not depend on the slag bath depth. There are 5 figures and 3 tables.

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Drop transfer of electrode metal in electroslag.... S/125/62/000/005/006/010  
D040/D113

ASSOCIATION: Ordena Lenina elektrometallurgicheskiy zavod "Elektrostal'" im.  
I.F. Tevosyana (Electrometallurgical "Order of Lenin" "Elektrostal'"  
Plant im. I.F. Tevosyan)

SUBMITTED: October 24, 1961

Card 3/3

TOPILIN, V.V.; KLIUYEV, M.M.; VOYNOVSKIY, Ye.V.; DORONIN, V.M.; ROZANOV, D.P.

Electric slag remelting of heat-resistant, stainless steels. Stal'  
23 no.9:805-809 S '63. (MIRA 16:10)

PANIN, V.V.; KLYUYEV, M.M.; TOPILIN, V.V.; DRUZHININA, N.P.

Investigating temperature fields in electric slag ingots.  
Izv. vys. ucheb. zav.; chern. met. 6 no.9:77-82 '63.(MIRA 16:11)

1. Zavod "Elektrostal".

L 1105-5 EEP(a)/EPA(a)/EMP(t)/EPP(t) 1105-5 1105-5

ACCESSION NR: AT4046848

S/0000/64/000/000/0236, 0242

AUTHOR: Banny\*kh, O. A., Zudin, I. F., [Candidate of technical sciences], E. G. Lina, Ya. G., Dzurgulov, M. Ya., Doronin, V. M., Topilin, V. V.

TITLE: Investigation of the phase composition and properties of chromium-manganese-aluminum steel

SOURCE: AN SSSR. Nauchny\*y sovet po probleme zharoprochny\*kh splavov. Issledovaniya staley i splavov (Studies on steels and alloys). Moscow, Izd-vo Nauka, 1964, 236-242

TOPIC TAGS: steel structure, steel phase composition, alloy steel, steel plasticity, steel oxidation, chromium steel, manganese steel, aluminum steel

ABSTRACT: X-ray and microstructural analyses were used to examine the structure and phase composition of 8 samples of carbon (0.5%)-manganese (15%)-aluminum (3%)-based steel with chromium (14-25%), nickel (to 3%) and copper (2.61%) additions in an attempt to develop steel brands with enhanced scale resistance. The 18-19 mm long rod-shaped samples were rolled at 1180C from 45-kg steel ingots prepared by pouring melts directly into molds at 1500-1560C. The integral intensity of the austenitic (111) line, ferritic (110) line, and (419), (212), and (411)  $\delta$ -phase lines were determined using an iron-emission

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L 13053-65

ACCESSION NR: AT4046848

URS-50I apparatus for angles of 27-30° in samples quenched from 1100C and aged at 700C for 40 hrs. The effect of hardening at 550-800C, and temperature (550-800C) and duration (to 100 hrs.) of aging on the microstructure and hardness was also investigated, and the scale-resistance was determined from weight gain by the previously described method of continuous weighing. The results show that: 1) treatment at 550-800C of steels with chromium contents in excess of 18% results in brittleness due to the formation of a  $\epsilon$ -phase; 2) steel with less than 18% chromium retains adequate plasticity after aging at 700C; and 3) scale resistance at 900C is greater in samples with an aluminum content in excess of 2.5%, while aluminum additions at 1000C and chromium additions of 18-25% at both temperatures have little effect on scale resistance. Orig. art. has: 6 tables, 4 figures and 1 formula.

ASSOCIATION: None

SUBMITTED: 16Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 001

2/3



2

L 8906-65

ACCESSION NR: AP4045459

Si, Mn, Cr, and Fe oxides in the slag. In most cases, the amount of these oxides in deoxidized slag was close to the amount of the same oxides in the initial flux, thus making possible its repeated use. Deoxidation of the slag during electroslag melting promoted a more effective removal of non-metallic inclusions, a more uniform distribution of highly active alloying elements, such as Al and Ti, along the ingot height, and almost eliminated their loss in the lower portion of ingots. Deoxidation of the slag during electroslag melting also improved the strength and ductility of the metal. For example, the rupture life of Al617 alloy at 700°C under a stress of 45 kg/mm<sup>2</sup> increased from 1000 to 2000 h; at 600°C under a stress of 20 kg/mm<sup>2</sup>, from 1000 to 2000 h; and at 500°C under a stress of 12 kg/mm<sup>2</sup>, from 1000 to 2000 h.

ASSOCIATION: Elektrometallurgical Plant "Elektrostal'" ("Elektrostal'" Elektrometallurgical Plant)

SUBMITTED: 23Apr63

ENCL: 00

SUB CODE: MM, IE

NO REF SOV: 005

OTHER: 000

Cord 2/2

VOYNOVSKY, A. V. 1944  
1944-1945. Aerial operating conditions of vacuum are something

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001756310014-3

NR REF SOV: 005

OTHER: 000

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001756310014-3"

ACCESSION NR: AP4019806

S/0279/64/000/001/0045/0047

AUTHOR: Pridantsev, M. V. (Moscow); Stepanov, V. P. (Moscow); Topilin, V. V. (Moscow); Kiyuyev, M. M. (Moscow)

TITLE: Effect of electroslag melting on the macrostructure of alloy KhN35VTYu

SOURCE: AN SSSR. Izv. Metallurgiya i gornoye delo, no. 1, 1964, 45-47

TOPIC TAGS: alloy KhN35VTYu, alloy macrostructure, spotted liquation, electroslag melting, slag ANF-6, slag AN291

ABSTRACT: This economical multi-component alloy on an Fe-Cr-Ni base, designated for use under extensive stress at high temperatures and representing an excellent substitute for similar Cr-Ni based systems, is limited in its applications by a tendency to spotty liquation. The authors investigated the effects of chemical composition and the quantity of slag ANF-6 (30-40%  $Al_2O_3$ , 60-70%  $CaF_2$ ) or AN291 (39-43%  $Al_2O_3$ , 16-20%  $CaF_2$ , 22-26%  $CaO$ , 14-20%  $MgO$ ), as well as of electrical current factors and electromagnetic stirring of the slag and metallic baths, on the macrostructure and surface quality of 1200-kg ingots of this alloy obtained by smelting cast or forged electrodes (200 mm) on the P-951 apparatus in a 425-mm diameter crystallizer. It is concluded that ingots of such size can be obtained free of spotty liquation when the build-up rate is held to 165-200 kg/hr (6l.v, Card 1/2

51"

ACCESSION NR: AP4019806

5.5-6.5 ka). The slow build-up rate is the decisive factor in obtaining ingots with satisfactory macrostructure. "Ye. V. Voynovskiy, N. P. Druzhinina, N. K. Kernich, M. I. Pichugina, L. F. Cherny'sheva and A. F. Raskova also participated in this study". Orig. art. has: 6 illustrations and 1 table.

ASSOCIATION: none

SUBMITTED: 26Jul63

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: ML

NO REF SOV: 004

OTHER: 001

Card 2/2

TOPIC TARS. electroslag melting, consumable electrode

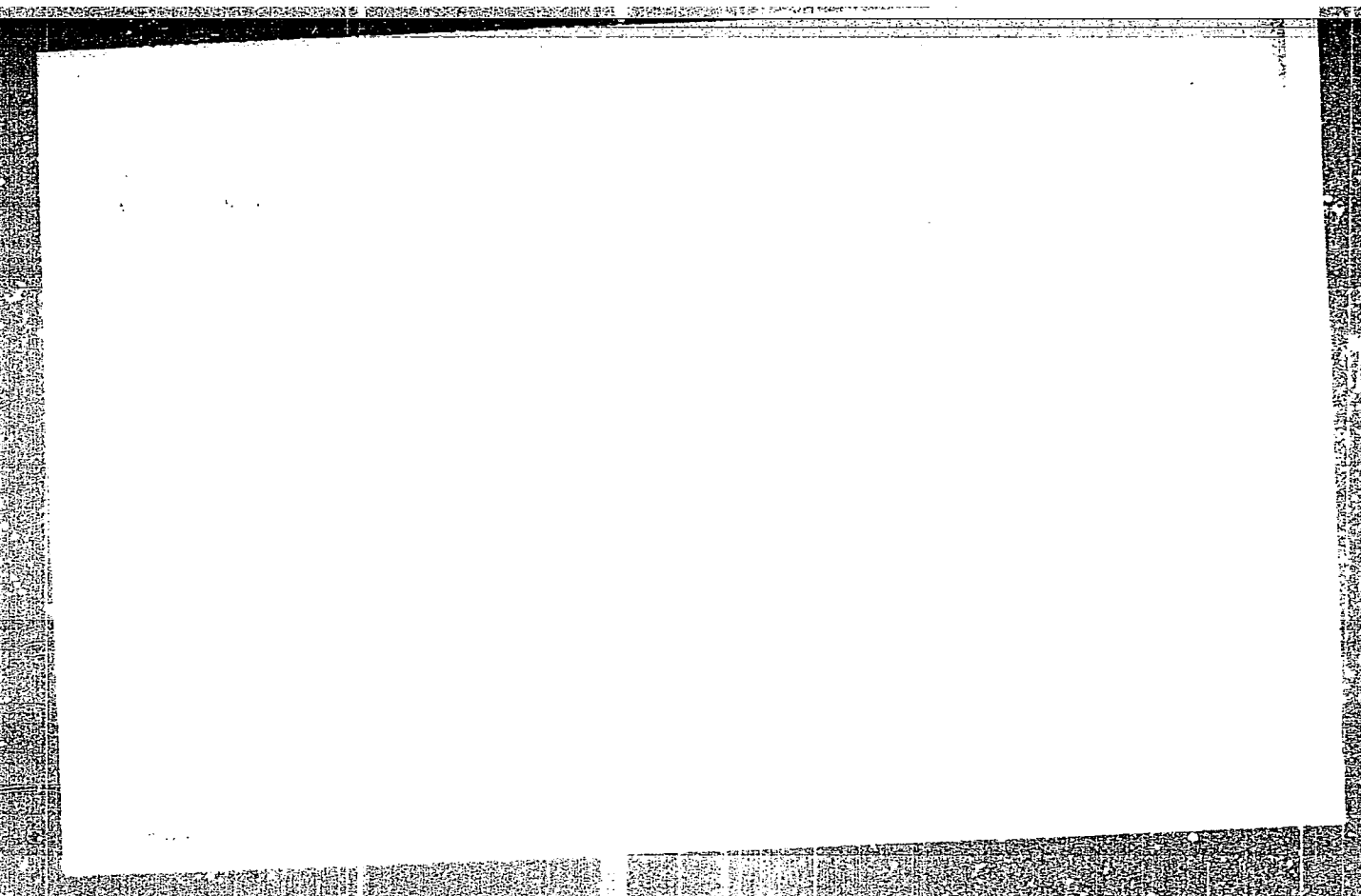
1. The process of electroslag melting is a method of metal casting in which the electrode is consumable.

2. The process is used for casting of high alloy steels and other difficult to cast metals.

Card 1 of 1

**"APPROVED FOR RELEASE: 08/31/2001**

**CIA-RDP86-00513R001756310014-3**



**APPROVED FOR RELEASE: 08/31/2001**

**CIA-RDP86-00513R001756310014-3"**

L 4177-66 EWT(a)/EWP(e)/EWP(i)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(o)

ACC NR: AP5024405 JIP(c)/JIP(d)/JIP(e)/JIP(f)/JIP(g)/JIP(h)/JIP(i)/JIP(j)/JIP(k)/JIP(l)/JIP(m)/JIP(n)/JIP(o)/JIP(p)/JIP(q)/JIP(r)/JIP(s)/JIP(t)/JIP(u)/JIP(v)/JIP(w)/JIP(x)/JIP(y)/JIP(z)/JIP(aa)/JIP(ab)/JIP(ac)/JIP(ad)/JIP(ae)/JIP(af)/JIP(ag)/JIP(ah)/JIP(ai)/JIP(aj)/JIP(ak)/JIP(al)/JIP(am)/JIP(an)/JIP(ao)/JIP(ap)/JIP(aq)/JIP(ar)/JIP(as)/JIP(at)/JIP(au)/JIP(av)/JIP(aw)/JIP(ax)/JIP(ay)/JIP(az)/JIP(ba)/JIP(bb)/JIP(bc)/JIP(bd)/JIP(be)/JIP(bf)/JIP(bg)/JIP(bh)/JIP(bi)/JIP(bj)/JIP(bk)/JIP(bl)/JIP(bm)/JIP(bn)/JIP(bo)/JIP(bp)/JIP(bq)/JIP(br)/JIP(bs)/JIP(bt)/JIP(bu)/JIP(bv)/JIP(bw)/JIP(bx)/JIP(by)/JIP(bz)/JIP(ca)/JIP(cb)/JIP(cc)/JIP(cd)/JIP(ce)/JIP(cf)/JIP(cg)/JIP(ch)/JIP(ci)/JIP(cj)/JIP(ck)/JIP(cl)/JIP(cm)/JIP(cn)/JIP(co)/JIP(cp)/JIP(cq)/JIP(cr)/JIP(cs)/JIP(ct)/JIP(cu)/JIP(cv)/JIP(cw)/JIP(cx)/JIP(cy)/JIP(cz)/JIP(da)/JIP(db)/JIP(dc)/JIP(dd)/JIP(de)/JIP(df)/JIP(dg)/JIP(dh)/JIP(di)/JIP(dj)/JIP(dk)/JIP(dl)/JIP(dm)/JIP(dn)/JIP(do)/JIP(dp)/JIP(dq)/JIP(dr)/JIP(ds)/JIP(dt)/JIP(du)/JIP(dv)/JIP(dw)/JIP(dx)/JIP(dy)/JIP(dz)/JIP(ea)/JIP(eb)/JIP(ec)/JIP(ed)/JIP(ee)/JIP(ef)/JIP(eg)/JIP(eh)/JIP(ei)/JIP(ej)/JIP(ek)/JIP(el)/JIP(em)/JIP(en)/JIP(eo)/JIP(ep)/JIP(eq)/JIP(er)/JIP(es)/JIP(et)/JIP(eu)/JIP(ev)/JIP(ew)/JIP(ex)/JIP(ey)/JIP(ez)/JIP(fa)/JIP(fb)/JIP(fc)/JIP(fd)/JIP(fe)/JIP(ff)/JIP(fg)/JIP(fh)/JIP(fi)/JIP(fj)/JIP(fk)/JIP(fl)/JIP(fm)/JIP(fn)/JIP(fo)/JIP(fp)/JIP(fq)/JIP(fr)/JIP(fs)/JIP(ft)/JIP(fu)/JIP(fv)/JIP(fw)/JIP(fx)/JIP(fy)/JIP(fz)/JIP(ga)/JIP(gb)/JIP(gc)/JIP(gd)/JIP(ge)/JIP(gf)/JIP(gg)/JIP(gh)/JIP(gi)/JIP(gj)/JIP(gk)/JIP(gl)/JIP(gm)/JIP(gn)/JIP(go)/JIP(gp)/JIP(gq)/JIP(gr)/JIP(gs)/JIP(gt)/JIP(gu)/JIP(gv)/JIP(gw)/JIP(gx)/JIP(gy)/JIP(gz)/JIP(ha)/JIP(hb)/JIP(hc)/JIP(hd)/JIP(he)/JIP(hf)/JIP(hg)/JIP(hi)/JIP(hj)/JIP(hk)/JIP(hl)/JIP(hm)/JIP(hn)/JIP(ho)/JIP(hp)/JIP(hq)/JIP(hr)/JIP(hs)/JIP(ht)/JIP(hu)/JIP(hv)/JIP(hw)/JIP(hx)/JIP(hy)/JIP(hz)/JIP(ia)/JIP(ib)/JIP(ic)/JIP(id)/JIP(ie)/JIP(if)/JIP(ig)/JIP(ih)/JIP(ii)/JIP(ij)/JIP(ik)/JIP(il)/JIP(im)/JIP(in)/JIP(io)/JIP(ip)/JIP(iq)/JIP(ir)/JIP(is)/JIP(it)/JIP(iu)/JIP(iv)/JIP(iw)/JIP(ix)/JIP(iy)/JIP(iz)/JIP(ja)/JIP(jb)/JIP(jc)/JIP(jd)/JIP(je)/JIP(jf)/JIP(jg)/JIP(jh)/JIP(ji)/JIP(jj)/JIP(jk)/JIP(jl)/JIP(jm)/JIP(jn)/JIP(jo)/JIP(jp)/JIP(jq)/JIP(jr)/JIP(js)/JIP(jt)/JIP(ju)/JIP(jv)/JIP(jw)/JIP(jx)/JIP(jy)/JIP(jz)/JIP(ka)/JIP(kb)/JIP(kc)/JIP(kd)/JIP(ke)/JIP(kf)/JIP(kg)/JIP(kh)/JIP(ki)/JIP(kj)/JIP(kk)/JIP(kl)/JIP(km)/JIP(kn)/JIP(ko)/JIP(kp)/JIP(kq)/JIP(kr)/JIP(ks)/JIP(kt)/JIP(ku)/JIP(kv)/JIP(kw)/JIP(kx)/JIP(ky)/JIP(kz)/JIP(la)/JIP(lb)/JIP(lc)/JIP(ld)/JIP(le)/JIP(lf)/JIP(lg)/JIP(lh)/JIP(li)/JIP(lj)/JIP(lk)/JIP(ll)/JIP(lm)/JIP(ln)/JIP(lo)/JIP(lp)/JIP(lq)/JIP(lr)/JIP(ls)/JIP(lt)/JIP(lu)/JIP(lv)/JIP(lw)/JIP(lx)/JIP(ly)/JIP(lz)/JIP(ma)/JIP(mb)/JIP(mc)/JIP(md)/JIP(me)/JIP(mf)/JIP(mg)/JIP(mh)/JIP(mi)/JIP(mj)/JIP(mk)/JIP(ml)/JIP(mn)/JIP(mo)/JIP(mp)/JIP(mq)/JIP(mr)/JIP(ms)/JIP(mt)/JIP(mu)/JIP(mv)/JIP(mw)/JIP(mx)/JIP(my)/JIP(mz)/JIP(na)/JIP(nb)/JIP(nc)/JIP(nd)/JIP(ne)/JIP(nf)/JIP/ng)/JIP(nh)/JIP(ni)/JIP(nj)/JIP(nk)/JIP(nl)/JIP(nm)/JIP(nn)/JIP(no)/JIP(np)/JIP(nq)/JIP(nr)/JIP(ns)/JIP(nt)/JIP(nu)/JIP(nv)/JIP(nw)/JIP(nx)/JIP(ny)/JIP(nz)/JIP(oa)/JIP(ob)/JIP(oc)/JIP(od)/JIP(oe)/JIP(of)/JIP(og)/JIP(oh)/JIP(oi)/JIP(oj)/JIP(ok)/JIP(ol)/JIP(om)/JIP(on)/JIP(oo)/JIP(op)/JIP(oq)/JIP(or)/JIP(os)/JIP(ot)/JIP(ou)/JIP(ov)/JIP(ow)/JIP(ox)/JIP(oy)/JIP(oz)/JIP(pa)/JIP(pb)/JIP(pc)/JIP(pd)/JIP(pe)/JIP(pf)/JIP(pg)/JIP(ph)/JIP(pi)/JIP(pj)/JIP(pk)/JIP(pl)/JIP(pm)/JIP(pn)/JIP(po)/JIP(pp)/JIP(pq)/JIP(pr)/JIP(ps)/JIP(pt)/JIP(pu)/JIP(pv)/JIP(pw)/JIP(px)/JIP(py)/JIP(pz)/JIP(qa)/JIP(qb)/JIP(qc)/JIP(qd)/JIP(qe)/JIP(qf)/JIP(qg)/JIP(qh)/JIP(qi)/JIP(qj)/JIP(qk)/JIP(ql)/JIP(qm)/JIP(qn)/JIP(qo)/JIP(qp)/JIP(qq)/JIP(qr)/JIP(qs)/JIP(qt)/JIP(qu)/JIP(qv)/JIP(qw)/JIP(qx)/JIP(qy)/JIP(qz)/JIP(ra)/JIP(rb)/JIP(rc)/JIP(rd)/JIP(re)/JIP(rf)/JIP(rg)/JIP(rh)/JIP(ri)/JIP(rj)/JIP(rk)/JIP(rl)/JIP(rm)/JIP(rn)/JIP(ro)/JIP(rp)/JIP(rq)/JIP(rr)/JIP(rs)/JIP(rt)/JIP(ru)/JIP(rv)/JIP(rw)/JIP(rx)/JIP(ry)/JIP(rz)/JIP(sa)/JIP(sb)/JIP(sc)/JIP(sd)/JIP(se)/JIP(sf)/JIP(sg)/JIP(sh)/JIP(si)/JIP(sj)/JIP(sk)/JIP(sl)/JIP(sm)/JIP(sn)/JIP(so)/JIP(sp)/JIP(sq)/JIP(sr)/JIP(ss)/JIP(st)/JIP(su)/JIP(sv)/JIP(sw)/JIP(sx)/JIP(sy)/JIP(sz)/JIP(ta)/JIP(tb)/JIP(tc)/JIP(td)/JIP(te)/JIP(tf)/JIP(tg)/JIP(th)/JIP(ti)/JIP(tj)/JIP(tk)/JIP(tl)/JIP(tm)/JIP(tn)/JIP(to)/JIP(tp)/JIP(tq)/JIP(tr)/JIP(ts)/JIP(tu)/JIP(tv)/JIP(tw)/JIP(tx)/JIP(ty)/JIP(tz)/JIP(ua)/JIP(ub)/JIP(uc)/JIP(ud)/JIP(ue)/JIP(uf)/JIP(ug)/JIP(uh)/JIP(ui)/JIP(uj)/JIP(uk)/JIP(ul)/JIP(um)/JIP(un)/JIP(uo)/JIP(up)/JIP(uq)/JIP(ur)/JIP(us)/JIP(ut)/JIP(uy)/JIP(uz)/JIP(va)/JIP(vb)/JIP(vc)/JIP(vd)/JIP(ve)/JIP(vf)/JIP(vg)/JIP(vh)/JIP(vi)/JIP(vj)/JIP(vk)/JIP(vl)/JIP(vm)/JIP(vn)/JIP(vo)/JIP(vp)/JIP(vq)/JIP(vr)/JIP(vs)/JIP(vt)/JIP(vu)/JIP(vv)/JIP(vw)/JIP(vx)/JIP(vy)/JIP(vz)/JIP(wa)/JIP(wb)/JIP(wc)/JIP(wd)/JIP(we)/JIP(wf)/JIP(wg)/JIP(wh)/JIP(wi)/JIP(wj)/JIP(wk)/JIP(wl)/JIP(wm)/JIP(wn)/JIP(wo)/JIP(wp)/JIP(wq)/JIP(wr)/JIP(ws)/JIP(wt)/JIP(wu)/JIP(wv)/JIP(wx)/JIP(wy)/JIP(wz)/JIP(xa)/JIP(xb)/JIP(xc)/JIP(xd)/JIP(xe)/JIP(xf)/JIP(xg)/JIP(xh)/JIP(xi)/JIP(xj)/JIP(xk)/JIP(xl)/JIP(xm)/JIP(xn)/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INVENTOR: Estulin, G. V.; Zimina, L. N.; Kosheleva, G. F.; Topilin, V. V.; Boyarinova, A. P.; Tsvetkova, V. K.; Khatalakh, R. F.; Shnyakin, N. S.; Polyakov, K. M.; Mel'nikov, M. V.; Belyakova, K. A.; Il'in, A. A.; Morozov, B. S.; Bogdanovskiy, S. P.; Khrakovskaya, P. S.

ORG: none

TITLE: Wrought, heat-resistant, nickel-base alloy. Class 40, No. 173418 [announced by Central Scientific Research Institute of Ferrous Metallurgy im. Bardin (Tsentrall'nyy nauchno-issledovatel'skiy institut chernoy metallurgii); z-d "Elektrostal" im. I. P. Tevosyan]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 15, 1965, 83

TOPIC TAGS: alloy, nickel alloy, chromium containing alloy, molybdenum containing alloy, tungsten containing alloy, titanium containing alloy, aluminum containing alloy, carbon containing alloy, beryllium containing alloy, cerium containing alloy

ABSTRACT: This Author Certificate introduces a wrought, heat-resistant, nickel-base alloy with improved mechanical properties and weldability. The alloy contains 17 to 20% chromium, 8-12% molybdenum, 0-6% tungsten, 2-3% titanium, 1-2% aluminum, 0.1% max carbon, 6% max iron, 0.01% max sulfur, 0.015 max phosphorus, 0.5% max manganese, 0.6% max silicon, 0.01% max boron, and 0.02% max cerium.

SUB CODE: MM/ SUBM DATE: 05Feb64/ ORIG REF: 000/ OTH REF: 000/ ATD PRESS: 4/28

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UDC: 669.245

L 43942-66 EWT(d)/EWT(m)/I/EWP(f)/EWP(t)/ETI IJP(c) JT/WB/JD  
 ACC NR: AP6027296 SOURCE CODE: UR/0133/66/000/008/0742/0745

AUTHOR: Doronin, V. M.; Topilin, V. V.; Verner, K. A.; Buynov, A. F.

ORG: Elektrostal' Plant (Zavod Elektrostal'); Scientific Research Automobile and Automotive Institute (N-1. avtomobil'nyy i avtomotorny institut); Gorky Automobile Plant (Gor'kovskiy avtomobil'nyy zavod)

TITLE: New steel for exhaust valves of internal-combustion engines

SOURCE: Stal', no. 8, 1966, 742-745

TOPIC TAGS: chromium nickel steel, manganese containing steel, nitrogen containing steel, austenitic steel, exhaust valve steel

ABSTRACT: A new age-hardenable austenitic 5Kh20N4AG9 (EP 303) steel (0.50—0.60% C, 8.0—10.0% Mn, 19—23% Cr, 3.5—4.5% Ni and 0.3—0.5% N) has been developed. The steel is fully austenitic and is strengthened by the precipitation of carbonitrides. The steel, annealed at 1180C, water quenched, and aged for 10—15 hr at 770C, has an Rc hardness of 31—32. At 700, 800 and 900C the respective tensile strength was 50, 30, and 20 kg/mm<sup>2</sup> and the 100-hr rupture strength was 20, 10, and 5 kg/mm<sup>2</sup>. The steel has high oxidation resistance. The weight increase in 300 hr at 900C amounted to 12.3 kg/m<sup>2</sup>. The corrosion susceptibility of the steel is lower than that of other valve steels. The weight loss in exhaust gases containing PbO, PbO<sub>2</sub>, and 2PbO·PbBr<sub>2</sub> at 850—950C in 135-min test amounted to 3047 g/m<sup>2</sup>·hr compared to 5080 g/m<sup>2</sup>·hr for

UDC: 669.14.018.8

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I 43942-66

ACC NR: AP6027296

2

EI69 steel. In tests of dimension stability, the EP303 valve grew by 0.16 mm in 215 hr compared to 0.7 mm for EP48 steel. Under operational conditions, the EP303 valves had 100% longer service life than EP48 valves. Orig. art. has: 9 figures and 2 tables. [WW]

SUB CODE: 1911 / SUBM DATE: none / ORIG REF: 004 / OTH REF: 004 / ATD PRESS: 506 /

precipitation hardening

18

Card 2/2 hs

L 43826-66 ENT(d)/ENT(m)/EWP(v)/T/EWP(t)/ETI/EWP(k)/EWP(h)/ENT(l) IJP(c)  
 ACC NR: AP6030265 (N)JD/HM/HW SOURCE CODE: UR/0125/66/000/008/0001/0005

AUTHOR: Paton, B. Ye.; Lakomskiy, V. I.; Dudko, D. A.; Zabarilo, O. S.;  
 Pryanishnikov, I. S.; Topilin, V. V.; Klyuyev, M. M.

ORG: [Paton; Lakomskiy; Dudko; Zabarilo] Electric Welding Institute im. Ye. O. Paton,  
 AN UkrSSR (Institut elektrosvarki AN UkrSSR); [Pryanishnikov; Topilin; Klyuyev] Elektrostal'  
 Plant im. I. F. Tevosyan (Zavod "Elektrostal")

TITLE: Plasma arc melting of metals and alloys

SOURCE: Avtomaticheskaya svarka, no. 8, 1966, 1-5.

TOPIC TAGS: plasma arc, metal melting, plasma arc melting, plasma arc furnace

ABSTRACT: A plasma arc furnace (see Fig. 1) for melting metals and alloys has been designed and built. The furnace is equipped with a PDM-3 plasma gun operating with a power input of 5-50 kw at a working voltage of 40-80 v and an open circuit voltage of 120 v. Ingots are 50-100 mm in diameter and up to 600 mm long. Several metals and alloys were melted in this furnace. It was found that the surface quality of the ingots was very high, there were no shrinkage holes, and the content of gaseous impurities was reduced significantly. For instance, the oxygen content in an NP-3 nickel (99.3% Ni+O) dropped from  $1.77 \cdot 10^{-2}\%$  to  $3-7 \cdot 10^{-4}\%$  and the density of the metal increased from 8.804 to 8.8424 g/cm<sup>3</sup>. The ingots were cold rolled from 75 mm to 0.10 mm with only one process annealing. In comparison with the original alloy, the formability improved 2-3 times, the rupture strength 40-60%, and elongation and

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UDC: 621.791:669.187.6

L 43020-00

ACC NR: AP6030265

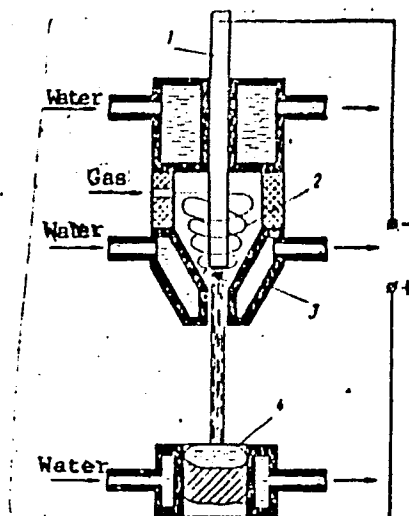


Fig. 1. Plasma furnace with direct action plasma gun

1 - Tungsten cathode; 2 - argon flow; 3 - water cooled nozzle; 4 - molten metal.

reduction of area 20—30%. Orig. art. has: 6 figures:

[TD]

SUB CODE: 13/ SUBM DATE: 28Mar66/ ATD PRESS: 5072

Card 2/2

L 43020-00

ACC NR: AP6030265

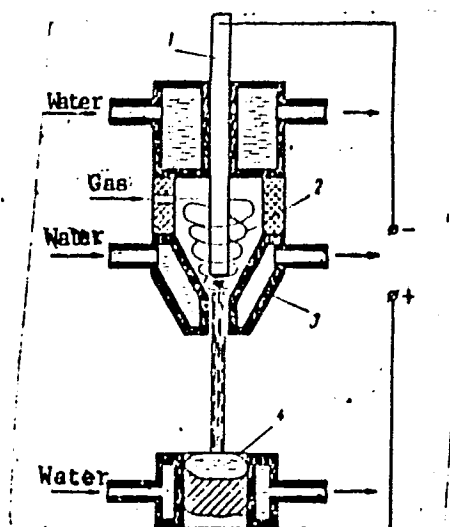


Fig. 1. Plasma furnace with direct action plasma gun

1 - Tungsten cathode; 2 - argon flow; 3 - water cooled nozzle; 4 - molten metal.

reduction of area 20—30%. Orig. art. has: 6 figures:

[TD]

SUB CODE: 13/ SUBM DATE: 28Mar66/ ATD PRESS: 5072

Card 2/2 fr

ACC NR: AP6027298

SOURCE CODE: UR/0133/66/000/008/0748/0751 65

AUTHOR: Svistunova, T. V.; Doronin, V. M.; Kruzhekov, V. I.; Topilin, V. V.; Dzugutov, M. Ya.; Vinogradov, Yu. V.; Chermenskaya, N. F.; Kordonov, B. A.

ORG: "Elektrostal'" Plant (Zavod "Elektrostal'"); TsNIICNM

TITLE: Corrosion resistant nickel-based alloys

SOURCE: Stal', no. 8, 1966, 748-751

TOPIC TAGS: corrosion resistant alloy, intergranular corrosion, nickel base alloy, fatigue strength

ABSTRACT: The authors study and compare corrosion resistance of various types of nickel-based alloys. The welded joints of these alloys are subject to intercrystalline corrosion in aggressive media. Methods are discussed for eliminating this phenomenon. Among these methods are heat treatment of the welded joints, reduction of carbon and iron content in the alloys and the introduction of carbide-forming elements. It was found that intercrystalline corrosion could be eliminated by alloying N70M27 alloy with 1.4-1.7% vanadium. This eliminates intercrystalline corrosion in welded joints up to 6 mm thick without requiring heat treatment. The new alloy is designated EP496. It was also found that intercrystalline corrosion could be eliminated in chromium-nickel-molybdenum alloys by reducing their carbon-silicon and iron content. The new

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UDC: 669.14.018,8

L 09250-07

ACC NR: AP6027298

alloy is designated EP567. Both of these new alloys have a fatigue limit of 5-7 kg/mm<sup>2</sup> at 1200°C which is 3-4 times higher than that of Kh18N9T steel. A new process is developed for melting and pressure working these alloys to satisfactory deformability. EP496 and EP567 alloys are melted in open induction furnaces with 500 and 1000 kg capacity. The ingots are worked on snagging machines until all defects are removed from their surfaces. Both alloys are difficult to machine, nevertheless, they can be roughed with much less difficulty than Kh18N10T steel. Deformation temperatures for both alloys are given. Both of these alloys have excellent corrosion resistance in hydrochloric and sulfuric acids at various temperatures and concentrations. The welded seams of these alloys are not subject to intercrystalline corrosion and therefore can be recommended for welded sheet structures and tubes used in the chemical and petroleum industries. Orig. art. has: 6 figures, 2 tables.

SUB CODE: 11/ SUBM DATE: None/ ORIG REF: 003/ OTH REF: 005

ACC NR: AT6034459

(A)

SOURCE CODE: UR/0000/66/000/000/0228/0231

AUTHOR: Doronin, V. M.; Topilin, V. V.; Verner, K. A.; Buyov, A. F.

ORG: none

TITLE: New heat resistant steel for the exhaust valves of internal combustion engines

SOURCE: AN SSSR. Institut metallurgii. Svoystva i primeneniye zharoprochnykh splavov. (Properties and application of heat resistant alloys). Moscow, Izd-vo Nauka, 1966, 228-231

TOPIC TAGS: heat resistant steel, valve, internal combustion engine

ABSTRACT: Existing steels with complete phase transformation, Types 4Kh9S2, 4Kh10S2M (EI107), and EI992 have high critical points but at temperatures above 750° have low strength and insufficient corrosion resistance. For this reason, a new economically alloyed austenitic steel Type EP303 has been developed; it has the following chemical composition: 0.5-0.6% C; 8-10% Mn; 19-22% Cr; 3.5-4.5% Ni; 0.5-1.0% Mo; 0.3-0.5% N. The steel is melted in electric arc furnaces. The nitrogen is introduced in the form of nitrated ferrochrome with a content of from 1.5 to 7% nitrogen. The degree of absorption of nitrogen by the metal, at small concentrations, is about 70% of the amount introduced. With an increase in the amount introduced, the absorption drops to about 54%. The final nitrogen content in steel EP303 tends toward a constant value of

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ACC NR: AT6034459

the order of 0.34-0.37%. A table shows the tensile strength of a number of valve steels, including the new alloy. A further table shows the comparative corrosion resistance of these alloys at 900°C. The new alloy is shown to be superior on all counts for valve construction. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 11/ SUM DATE: 10Jun66/ ORIG REF: 001/ OTH REF: 001  
21/

Card 2/2

ACC NR: AP700387C

(N)

SOURCE CODE: UR/0133/67/000/001/0039/0041

AUTHOR: Fomicheva, N. P.; Klyuyev, M. M.; Topilin, V. V.; Tuchkevich, N. M.;  
Doronin, V. M.; Dzugutov, M. Ya.; Terekhov, K. I.; Mikhin, T. A.

ORG: none

TITLE: Electroslog remelting of EI481 chromium-manganese-nickel heat resistant steel

SOURCE: Stal', no. 1, 1967, 39-41

TOPIC TAGS: ~~chromium manganese nickel~~ <sup>CHROMIUM NICKEL STEEL, NICKEL STEEL,</sup> steel, heat resistant steel, steel melting,  
electroslog melting, steel composition, steel mechanical property/EI481 steel

ABSTRACT:

Cast EI481 high-alloy heat-resistant steel (0.34—0.40% C, 7.5—9.5% Mn, 11.5—13.5% E, 7.0—9.0% Ni, 1.1—1.4% Mo, 0.25—0.45% Nb, 1.3—1.6% V, 0.3—0.8% Si) was electroslog remelted under four different slags and tested for chemical composition, nonmetallic inclusions and mechanical properties. The best results were obtained with the use of standard or with 10% lime No. 4 slag of the  $\text{CaF}_2$ -CaO system. In all cases, electroslog remelting changed only slightly the steel composition. It decreased the content of manganese by 0.04—0.20 abs.% and of vanadium by 0.08 abs.%; the sulfur content decreased by 20—40%, but no substantial decrease was observed in the hydrogen and oxygen contents. The electroslog remelting also decreased

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UDC: 669.187.26

ACC NR: AP7003870

the content of nonmetallic inclusions from 98.7 to 52.3·10<sup>-4</sup>% and resulted in more uniform distribution. No significant changes were observed in the mechanical properties of the electroslog remelted metal (all were above the technical requirements) but the anisotropy of the ductility characteristics decreased by 20—40%. In stress-rupture tests at 650C under a stress of 38 kg/mm<sup>2</sup>, the steel remelted under No. 4 slag failed after 156 hr compared with 35 hr required for conventionally melted steel. Forged parts from electroslog remelted steel had a tensile strength of 112.0—104.0 kg/mm<sup>2</sup>, a yield strength of 74.0—83.7 kg/mm<sup>2</sup>, an elongation of 19.2—24.0%, a reduction of area of 31.2—43.9% and an impact toughness of 4.5—5.5 kg·m/cm<sup>2</sup>. The corresponding figures for forgings of conventionally melted EI481 steel were 60 and 85 kg/mm<sup>2</sup>, 15 and 20%, and 2.5 kg·m/cm<sup>2</sup>. The electroslog remelting of EI481 steel can be recommended for increasing the service life of parts made from this steel. Orig. art. has: 2 tables.

[MS]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 5115

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1.2300 also 1045.

S/125/60/000/010/002/015  
A161/A133

AUTHORS: Medovar, B.I., Maksimovich, B.I., Latash, Yu.V., Topilin, V.V.,  
Klyuyev, M.M., Shiryayev, N.A.

TITLE: The Effect of Electro-Slag remelting on the Quality of Stainless  
OX18H9 (OKh18N9) and 1X14H19B36 (1Kh14N19V3B)(ЭИ851 (EI851)) Steel

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 10, pp. 11-18

TEXT: The article contains information on experiments with electro-slag re-melting process. The material used were bars of OX18H9 (OKh18N9) steel 100 mm in diameter, and ЭИ851 (EI851) steel 85 mm in diameter joined into bundles of three and melted in an ingot mold of 250 mm diameter. Five 300 kg ingots were cast. Two ingots were reformed into a 25x175x515 mm billet, and two into a 95 mm diameter bar; one was investigated as cast. The results of metallographic investigation are presented. There were no streaks, nor non-metallic inclusion accumulations, and the absolute content of slag inclusions was considerably lower than in the initial metal, which was also confirmed by

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S/125/60/000/010/002/015  
A161/A133

The Effect of Electro-Slag Remelting on the Quality of Stainless 0X18H9  
(OKh18N9) and 1X14H19B3B (1Kh14N19V3B) (ЭИ851 (EI851)) Steel

electro-chemical solving. The total gas content was twice lower than in the initial metal; the nitrogen and oxygen contents were reduced more than the hydrogen content. Apparently, oxygen is being eliminated in the process with floating oxide inclusions, and nitrogen and hydrogen can separate with bubbles forming on the surface of the growing metal grains. Nitrogen separates from metal easily when the metal contains no components forming stable nitrides (titanium, niobium). Nitrides having a higher melting point and larger volume do not coagulate and stick more easily in interaxial spaces. This explains the different quantity of nitrogen eliminated from the two steel grades. The following conclusions are made: 1) The electro-slag process considerably reduces the gas content and nonmetallic inclusions in both steel grades. 2) It raises the ductility of austenitic stainless steel grade and considerably reduces the anisotropy of mechanical properties. 3) The ductility of the remelted metal at hot deformation temperature is 30-40% higher than that of the initial one. There are 8 figures, 5 tables and 5 Soviet-bloc references.

Card 2/3

S/125/60/000/010/002/015  
A161/A133

The Effect of Electro-Slag Remelting on the Quality of Stainless 0X18H9  
(OKh18N9) and 1X14H19B3E (1Kh14N19V3B) (ЭИ851 (EI851)) Steel

ASSOCIATIONS: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im.Ye.  
O.Patona AN USSR ("Order of the Red Banner of Labor" Electric  
Welding Institute im.Ye.O.Paton of the UkrSSR Academy of  
Sciences) (B.I. Medovar, B.I. Maksimovich and Yu.V. Latash);  
Ordena Lenina elektrometallurgicheskiy zavod "Elektrostal'" im.  
I.F.Tevosyana ("Order of Lenin" Electro-Metallurgical "Elektro-  
stal'" Plant im.I.F.Tevosyan) (V.V. Topilin, M.M. Klyuyev and  
N.A. Shirayev)

SUBMITTED: May 5, 1960

Card 3/3

18.3200 143G, 143H, 1573

8/125/60/000/009/003/017  
A161/A130

AUTHORS: Latach, Yu.Y., Maksimovich, B.I., Medovar, B.I., Klyuyev, M.M.,  
Topilin, V.V.

TITLE: Elimination of Non-Metallic Inclusions from Metal in the Electro-  
Slag Remelting Process

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 9, pp. 17-23

TEXT: As known from previous works, treatment with slag in the electro-slag remelting process reduces the sulfur content (Ref. 5, 6), and the quantity of sulfide inclusions drastically decreases (Ref. 3, 4). Experiments have been carried out by the Electric Welding Institute at the "Dnepropetrestal" Plant to investigate the effect of flux composition and properties in the electro-slag remelting of ball bearing steel grade ШХ15СГ (ШХ15С0). (The initial metal had been highly contaminated.) Three steel rods of 85 mm diameter each were joined into a bunch and melted as electrodes in a water-cooled copper ingot mold of 260 mm diameter. The composition of the three

Сала-4/2

S/125/60/000/009/003/017  
A161/A130

Elimination of Non-Metallic Inclusions from Metal in the Electro-Slag  
Remelting Process

different fluxes used in the following:

|                      | $\text{CaF}_2$<br>% | $\text{CaO}$<br>% | $\text{Al}_2\text{O}_3$<br>% |
|----------------------|---------------------|-------------------|------------------------------|
| AN-11 (ANF-1P) ..... | Bulk                | 5                 | -                            |
| AN-6 (ANF-6) .....   | 65                  | 5                 | 30                           |
| AN-29 (AN-29) .....  | -                   | 45                | 55                           |

Eleven ingots of 310 to 320 kg were cast. Due to the difference in conductivity of the flux grades (lowest in AN-29) the melting rate was different (Table 2). It is emphasized that in the case of the watched ingot diameter (260 mm), the growing melting speed is accompanied by a change of grain growth direction, and the axial growth is gradually replaced by radial growth. The degree of purification from sulfides increased in the order ANF-1P, ANF-6, AN-29 flux, i.e., the highest purification was obtained with the AN-29 which had the highest CaO content. The better effect of ANF-6 than of

Capa-2/5

5/125/60/000/009/003/017  
A161/A130

Elimination of Non-Metallic Inclusions from Metal in the Electro-Slag  
Remelting Process

ANF-1P is explained by its better desulfurizing capacity due to  $Al_2O_3$ , lowering the melting point of flux and raising the slag pool temperature. The effect of ANF-1P and ANF-6 on the content of oxides, silicates and globular inclusions was equal, and of the AN-29 weaker (Fig. 2). Non-metallic inclusions rose to the surface in the process, and the top portion of the ingots was contaminated more than the bottom, particularly by globules in remelting with AN-29 flux. The following conclusions were made:

1. It has been proven on the example of ball bearing steel ShKh15S3 that metal is purified from oxides, silicates and globules mainly due to the inclusions rising to the surface and the purification degree depends on the speed of the ingot formation, i.e., on the speed of the crystallization front motion, and the orientation of the crystal growth (axial or radial).
2. The desulfurization degree depends mainly on the desulfurizing capacity of the flux, and not on the speed of melting. 3. It can be stated that it

Cast 3/5

S/125/60/000/009/003/017  
A161/A130

Elimination of Non-Metallic Inclusions from Metal in the Electro-Slag  
Remelting Process

is possible to obtain ball bearing steel of a particularly high purity from non-metallic inclusions by using the electro-slag remelting process. Such steel is suitable for special small bearings in the most critical applications. Engineer S.A. Leybenzon of "Dnepropetrestal" took part in experiments. There are 5 figures and 12 Soviet references. X

ASSOCIATIONS: Ordona Trudovogo Krasnogo Znasheni institut elektrosvarki im. Ye.O. Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O. Paton of the Academy of Sciences of the USSR) - Yu.V. Lataeh, B.I. Maksimovion, B.D. Medovar; Ordona Lenina metallurgicheskii zavod im. I.M. Tsvosyana (Metallurgical Plant "Order of Lenin" im. I.M. Tsvosyan) - M.M. Klyuyev and V.V. Topilin

SUBMITTED: April 20, 1960

Card 4/5

VOROB'YEV, Yu.K.; DORONIN, V.M.; KLYUYEV, M.M.; TOPILIN, V.V.; SHIRYAYEV,  
N.A.; VOYNOVSKIY, Ye.V.; MEDOVAR, B.I.; LATASH, Yu.V.; MAKSIMOVICH, B.I.

Effect of electric slag refining on the quality of EI847 chromium-  
nickel-molybdenum steel. Avtom. svar. 14 no.1:52-56 Ja '61.

(MIRA 14:1)

1. Ordena Lenina zavod "Elektrostal" imeni I.F.Tevosyana (for Vorob'yev,  
Doronin, Klyuyev, Topilin, Shiryayev, Voynovskiy). 2. Ordena  
Trudovogo Krasnogo Znameni Institut elektroniki imeni Ye.O.Patona  
AN USSR (for Medovar, Latash and Maksimovich).

(Chromium-nickel steel—Electrometallurgy)  
(Metallurgical plants—Quality control)

TOPILIN, Ye.K.

Volgograd farmers are raising agricultural standards. Zemledelie  
23 no.12:7-10 D '61. (MIRA 15:1)

1. Nachal'nik Volgogradskogo oblastnogo upravleniya sel'skogo  
khozyaystva.

(Volgograd Province--Agriculture)

RADOV, A.S.; SHUBIN, G.A.; TOPILIN, Ye.K.; BEGUCHEV, P.P.; GUDKOV, A.N.;  
VEDENYAPIN, G.Ye.; SHUBIN, V.F.; BASKHODOV, G.F.; KAZAKEVICH, L.I.;  
IVASHCHENKO, P.S.; KONUROV, S.G.; AGAPOV, P.F.; IVANOV, A.F.

Grigorii Mikhailovich Tumin; 1876-1957. Pochvovedenie no.11:  
103 N '58. (MIRA 11:12)

(Tumin, Grigorii Mikhailovich, 1876-1957)

TOPILINA, N. P.; SAMUL'TSEVA, M. V. (Saratov)

Agranulocytic reaction. Klin. med. no.8:128 '61. (MIRA 15:4)

1. Iz kafedry gosspital'noy khirurgii (i. o. zav. - dotsent  
G. N. Zakharova) lechebnogo fakul'teta Saratovskogo meditsinskogo  
instituta i 1-y Sovetskoy bol'nitsy (glavnyy vrach P. N. Filippenko)

(AGRANULOCYTOSIS)

USSR/Farm Animals - Swine.

Abs Jour : Ref Zhur - Biol., No 13, 1958, 83445

Author : Chirkov, D., Tomilina, I.

Inst : -

Title : Pasture Keeping of Swine in West Siberia.

Orig Pub : S. Kh. Sibiri, 1957, No 7, 51-56.

Abstract : The article deals with feeding swine with potatoes, sugar beets, lucerne grass, vetch and oat mixtures, and with some other cultures as well.

Card 1,1

TOPILINA, T.

Arkadii Aleksandrovich Rylov. IUn. nat. no.6:28 Je '62.  
(MIRA 15:8)  
(Rylov, Arkadii Aleksandrovich, 1870-1939)

TOPILINA, T.

Aleksandr Aleksandrovich Deineka. IUn. nat. no,9:28 S '62.  
(MIRA 16:5)  
(Deineka, Aleksandr Aleksandrovich, 1899-)

TOPILINA, T.

Poetry of our nature. IUn.nat. no.7:28b-29 J1 '62. (MIRA 15:8)  
(Painting, Russian)

TOPILINA, Tat'yana, iskusstoved

Light is your good ally. Sov.profsoiuzy 19 no.5:32 Nr '63.  
(MIRA 16:2)

(Electric light fixtures)

TOPILINA, Tat'yana, iskusstvoved

Child's initiation to the world of beauty. Sov. profsoiuzy 19 no.7:32  
Ap '63. (MIRA 16:4)

(Childred as artists)

AZERNIKOV, V.; ARLAZOROV, M.; ARSKIY, F.; BAKANOV, S.; BELOUSOV, I.;  
BILENKIN, D.; VAIEL', I.; VLADIMIROV, L.; GUSHCHEV, S.;  
YELAGIN, V.; YERESHKO, F.; ZHURBINA, S.; KAZARNOVSKAYA, G.;  
KALININ, Yu.; KELER, V.; KONOVALOV, B.; KREYNDLIN, Yu.;  
LEBEDEV, L.; PODGORODNIKOV, M.; RABINOVICH, I.; REPIN, L.;  
SMOLYAN, G.; TITARENKO, V.; TOPILINA, T.; FEDCHENKO, V.;  
EYDEL'MAN, N.; EME, A.; NAUMOV, F.; YAKOVLEV, N.;  
MIKHAYLOV, K., nauchn. red.; LIVANOV, A., red.

[Little stories about the great cosmos] Malen'kie rasskazy o  
bol'shom Kosmose. Izd.2., Moskva, Molodaia gvardiia, 1964.  
368 p. (MIRA 18:4)

PISARSKI, Tadeusz; TOPILKO, Andrzej

Comparative studies of vascular syncytial membranes of human placenta in electron and light microscopes. Ginek. Pol. 36 no. 12:1317-1325 D: 65

1. Z I Kliniki Położnictwa i Chorob Kobietych AM w Poznaniu (Kierownik: prof. dr. med. W. Michalkiewicz) i z Zakładu Anatomii Patologicznej AM w Poznaniu (Kierownik: doc. dr. med. P. Gabryś).

ABIDZHANOV, A.A.; TOPIL'SKAYA, N.V.

Studying chicken coccidia in Tashkent. Uzb. biol. zhur. no.5:65-69  
'60. (MIRA 13:11)

1. Institut zoologii i parazitologii AN UzSSR.  
(Tashkent--Coccidiosis) (Poultry--Diseases and pests)

TOPIL'SKAYA, V. ~~...~~ sasluzhennyy agronom RSFSR

Over-all mechanization in the collective farm orchard. Nauka  
i pered.op.v sel'khoz. 9 no.9:26-29 S '59. (MIRA 13:2)

1. Direktor sovkhoza imeni 15-letiya Oktyabrya, Lipetskoy  
oblasti.

(Fruit culture) (Agricultural machinery)

TOPIL'SKAYA, V.S.; METLITSKIY, L.V.

Results of teamwork between a fruit state farm and a Scientific Research Institute. Kons. i ov. prom. 15 no. 12:1-3 D '60.

1. Sovkhoz imeni 15-letiya Oktyabrya Lipetskoy oblasti (for Topil'skaya). 2. Tsentral'nyy nauchno-issledovatel'skiy institut konservnoy i ovoshchesushil'noy promyshlennosti (for Metlitskiy).  
(Canning industry)

BROSS, Wiktor; KLISIECKI, Andrzej; NOWACKI, Pawel; KOCZOROWSKI, Stefan;  
TOPINSKI, Stanislaw; ARONSKI, Antoni

Experimental measurements of intracardiac temperature during flow of  
various defibrillating currents. Acta medica polona 3 no.3:231-236  
'62.

1. II Surgical Clinic, Medical Academy, Wroclaw Director: Prof. Dr.  
W. Bross Department of Physiology, Medical Academy, Wroclaw Director:  
Prof. Dr. A. Klisiecki The Electrotechnical Institute of the Polish  
Academy of Sciences, Warsaw Director: Prof. Dr. P. Nowacki.  
(VENTRIBULAR FIBRILLATION)

TOPIL'SKIY, K.L. (Vladivostok)

Expansion prospects for strip mining methods in the Maritime  
Territory. Ugol' 34 no.12:8-9 D '59. (MIRA 13:4)  
(Maritime Territory--Strip mining)

BOBKOVA, O.S.; AGARKOVA, N.A.; RABUKHIN, A.N.; TOPIL'SKIY, P.V.; RYSS, M.A.

Producing refined ferrochromium by the mixing of melts. Stal' 23 no.4:  
331-333 Ap '63. (MIRA 16:4)

(Iron-chromium alloys--Metallurgy)

MOCHAR, L.I., inzhener; TOPIL'SKIY, N.A., inzhener.

Erecting electric transmission line supports by preliminary  
hoisting with a pipe layer. Elek.sta. 25 no.2:46 P '54.

(MLRA 7:2)

(Electric lines--Poles)

FERBEROV, Leonid Yakovlevich; TURIN, Aleksandr Aleksandrovich;  
~~TOPIL'SKIY~~, Nikolay Leonidovich; GRAMMATIKOV, A.N., otv.red.;  
MIROSHNICHENKO, V.D., red.izd-va; PROZOROVSKAYA, V.L., tekhn.red.

[Compiling estimates and making calculations for capital construction in the coal industry] Sostavlenie smetnoi dokumentatsii i proizvodstvo raschetov v kapital'nom stroitel'stve ugol'noi promyshlennosti. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu. Pt.1. [Estimates for coal-mining work] Smetnaya dokumentatsiia na gornoproduktsionnye raboty. 1960. 261 p.  
(MIRA 14:6)

(Coal mines and mining—Finance)

TOPIL'SKIY, N.L., inzh.

Possibilities for lowering the cost of rock removal in vertical shafts. Shakht. stroi. 4 no.3:5-6 Mr '60. (MIRA 13:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut Podzemshakhtostroy. (Pneumatic machinery) (Mine hoisting)

TOPIL'SKIY, N.L., inzh.

Economic aspects of the mechanized loading of rocks in working  
horizontal tunnels. Shakht. stroi. 4 no. 12:3-5 D. '60.  
(MIRA 13:12)

1. Tsentral'nyy nauchno-issledovatel'skiy institut Podzemshakhtostroy.  
(Mining engineering) (Loading and unloading)

FERBEROV, Leonid Yakovlevich; TOPIL'SKIY, Nikolay Leonidovich;  
LYUL'KO, Ye.V., retsenzent; GRAMMATIKOV, A.M., otv.red.

[Preparing estimates and the payment procedure for  
capital construction in the coal industry. Estimates for  
construction work, and the acquisition and assembly of  
equipment] Sostavlenie smetnoi dokumentatsii i proizvod-  
stvo raschetov v kapital'nom stroitel'stve ugol'noi pro-  
myshlennosti. Moskva, Nedra. Pt.2. 1964. 341 p.  
(MIRA 18:2)

*ca*

The waste waters from chemical industries. P. POLINSKY Chem Listy 23, 161-67  
(1920) The disposal of waste waters is discussed and reviewed FRANK MARSH

*14*

COMMON ELEMENTS

MATERIALS INDEX

OPEN

AS A S L A METALLURGICAL LITERATURE CLASSIFICATION

BASED ON THE

RESEARCH AND DEVELOPMENT

RESEARCH AND DEVELOPMENT

1/1

CZECHOSLOVAKIA

SOVA, J.; KARLICEK, V.; TOPINKA, I.; LANG, N.; Clinic of Internal Diseases, Medical Faculty, Charles University (Klinika Chorob Vnitřních Lek. Fak. KU), Plzen, Chief (Prednosta) Prof Dr J. SOVA

"Influence of Histamine on Vanilmandelic Acid Excretion in Diastolic Hypertension."

Prague, Casopis Lekaru Ceskych, Vol 106, No 9, 3 Mar 67, pp 250 - 252

Abstract [Authors' English summary modified]: Vanilmandelic acid excretion after intravenous stimulation with histamine was investigated in 7 normotonic and 10 hypertonic subjects. In normotonic subjects the excretion rose significantly, in hypertonic there was no change; even when nicotine and psychic stress were applied, no change was observed. The explanation is probably due to a disorder in catecholamine degradation and a deficiency in monoamine oxidase activity. 2 Figures, 1 Table, 13 Western, 2 Czech references.

1/1

TOPIRCEANU, L., ing.

Impressions from the German Democratic Republic. Mec  
electrif agric 9 no. 4:68-70 '64.

1. Director General, Section of Repair Works.

TOPIRCEANU, I., ing.

Role and tasks of repair stations in insuring a good operating  
quality of the agricultural equipment. Mec electrif agric 9  
no.5:3-7 '64.

1. Director General, Trust of Repair Stations.

VOINOV, S.G.; KALINNIKOV, Ye.S.; TOPIL'SKIY, P.V.; BOBKOVA, O.S.;  
KUKLIN, V.G.; BATO, V.P.; KOSOY, L.F.; SHALIMOV, A.G.;  
Prinimali uchastiye: IOFFE, V.N.; CHAROMENKO, N.I.;  
IVANCHENKO, G.M.; KALASHOVA, N.A.

Developing a procedure for the making of limestone and alumina  
semifinished products for the preparation of synthetic slag.  
Stal' 22 no.2:128-132 F '62. (MIRA 15:2)

(Slag)  
(Electric furnaces)

CZECHOSLOVAKIA/Chemical Technology. Chemical  
Products and Their Applications.  
Cellulose and Its Derivatives.  
Paper.

H

Abs Jour : Ref Zhur-Khimiya, No 6, 1959, 21788

Author : Topinka, Vladimir

Inst :

Title : Dependence Between the Content of Water  
in Wood and Its Properties.

Orig Pub : Papir a celuloza, 1958, 13, No 7,  
155-156

Abstract : The problem of the spread (accumulation)  
of water in wood (W) and of the inter-  
relation between the moisture of W and  
its stability in displacement is examined.

Card : 1/2

H-144

CZECHOSLOVAKIA/Chemical Technology. Chemical  
Products and Their Applications.  
Cellulose and Its Derivatives.  
Paper.

H

Abs Jour : Ref Zhur-Khimiya, No 6, 1959, 21788

These relations have a practical value during defibering of W in the wood pulp production process. Special attention is allotted to the outlay of electrical power in defibering. -- From the author's summary.

Card : 2/2

TOPINKA, Zdenek, promovany geolog

Problems of noncore drilling in prospecting for coal deposits.  
Geol pruzkum 6 no.5:135-136 My '64.

1. Central Geologic Institute, Prague.

TOPINSKI, Stanislaw

Thermistor starters in D.C. motor circuits. Rozpr elektro-  
tech 9 no.4:523-556 '63.

1. Instytut Podstawowych Problemow Techniki, Polska Akademia  
Nauk, Warszawa.

TOPKASOV, L.P.; NEFEDOV, M.V.

Rapid assembly of shops for the production of caprolactam.  
Prom. stroi. 41 no.2:10-12 F '63. (MIRA 16:3)

1. Trest Sibmetallurgmontazh.  
(Kemerovo—Azepinone)  
(Kemerovo—Chemical plants)

VOSKRESENSKAYA, N.T.; TIMOFEYEVA, N.V.; TOPKHANA, M.

Thallium in some minerals and rocks of sedimentary genesis.  
Geokhimiia no.8:737-741 '62. (MIRA 15:9)

1. Kafedra geokhimii Moskovskogo gosudarstvennogo  
universiteta imeni Lomonosova.  
(Thallium)

KISELEV, G., mayor; TOPIL'SKIY, V., mayor; GLUSHKIN, I., starshina;  
UFIMTSEV, I., kapitan; PROKOP'YEV, G., starshiy leytenant;  
DEREVYANKO, N., leytenant

How do you train radiotelegraph operators?; discussion  
of the article published in No.1. Voen. vest. no.3:  
101-103 Mr'64. (MIRA 17:5)

ТОПКОВ, В. Г.

26201 Испытания во вращающемся состоянии дисков при высоких температурах.  
Сборник трудов ин-та строит механики (Акад наук Укр. ССР), 11, 1949, с. 144-57

SO: LATOPIS' NO. 35, 1949

TOPKOV, V. G.

26202 Ob ustoychivosti kruglykh plastinok pri nagreve. Sbornik trudov in-ta  
stroit mekhaniki (Akad nauk Ukr. SSR), 11, 1949, s. 158-70

SO: LETOPIS' NO. 35, 1949

STOJKOV, Nevena; MILETIC-SAIN, Dimitrije; TOPLA, Dusanka

Fasciolasis hepatica. Srpski arh. celok. lek. 84 no.11:  
1255-1265 Nov 56.

1. Decja klinika Medicinskog fakulteta u Beogradu. Upravnik:  
prof. Milivoje Sarvan.

(DISTOMIASIS, in infant and child.  
(Ser))

TOPLENINOVA, K.A.; REMEZOV, P.I.

Improving the diagnosis of rabies. Veterinariia 37 no.11:85-88  
N 160. (MIRA 16:2)  
(Rabies)

REMEZOV, P.I.; TOPLENINOVA, K.A.

Indirect method of fluorescent antibodies for diagnosing  
lymphocytic choriomeningitis. Veterinariia 38 no.9:84-86  
S '61. (MIRA 16:8)

1. Voenno-meditsinskaya ordena Lenina akademiya imeni  
Kirova.

TOPLINNOVA, K.A.  
TOKAREVICH, K.N.; IVANOV, N.P.; SHMERLING, S.V.; DANSKER, V.N.; TOPLINNOVA, K.A.

Materials on the study of leptospiral jaundice. Report No.13: First results of specific serum therapy in Weil's disease in Leningrad. Trudy Len.inst.epid. i mikrobiol. 9:128-137 '47. (MLRA 10:9)

1. Iz laboratorii po izucheniyu leptospirozov (zav. K.N.Tokarevich) Instituta epidemiologii i mikrobiologii im. Pastera (dir. F.I.Krasnik) i Instituta vaktsin i syvorotok (dir. A.A.Sinitakiy) i infektsionnogo otdeleniya bol'nykh V.Shutakov (glavnyy vrach E.M.Abkin)  
(LENINGRAD--WEIL'S DISEASE) (SERUM THERAPY)

TOPLENINOVA, K. A., REMEZOV, P. I.

Perfecting the diagnosis of rabies, Veterinariya, Vol. 37, No. 11, p. 85, 1960.

TOPLENINOVA, K. A. and REMEZOV, P. I. (Military-Medical Academy of Order of Lenin  
Imeni S. M. Kirova)

The indirect method of application of fluorescent antibodies for the  
diagnosis of lymphocytic choriomeningitis.

Veterinariya vol. 38, no. 9, September 1961, pp. 24.

TOPLENINOVA, K.A.

Use of an indirect fluorescent antibody method in the detection of  
the rabies virus. Vop.virus. 6 no.2:174-177 Mr-Ap '61. (MIRA 14:6)

1. Kafedra mikrobiologii Voenno-meditsinskoy ordena Lenina akademii  
imeni S.M.Kirova, Leningrad.  
(RABIES) (ANTIGENS AND ANTIBODIES)

REMEZOV, P.I.; TOPLENINOVA, K.A.

Detection of the lymphocytic choriomeningitis virus using an  
indirect fluorescing antibody method. Vop.psikh.i nevr. no.7:113-  
120 '61. (MIRA 15:8)  
(MENINGITIS VIRUSES) (ANTIGENS AND ANTIBODIES)  
(FLUORESCENCE MICROSCOPY)

ACC NR: AP6027250

SOURCE CODE: UR/0177/66/000/007/0044/0049

AUTHOR: Bashmakov, G. A. (Major; Medical corps); Topleninova, K. A.

ORG: none

TITLE: Using fluorescent antibodies to detect tick-borne and Japanese encephalitis virus

SOURCE: Voyenno-meditsinskiy zhurnal, no. 7, 1966, 44-49

TOPIC TAGS: fluorescent antibody technique, disease diagnosis, diagnostic method, Japanese encephalitis, tick borne encephalitis, virus, virus disease, antibody, encephalitis, fluorescence

ABSTRACT:

The fluorescent-antibody technique was applied to various types of cells infected with tick-borne encephalitis virus to determine its value as a diagnostic method. This method reveals viruses in 18—48 hr depending on the types of cells studied. Virus was detected in the medium after 24 hr, making this the fastest available method. [WA-50; CBE No. 11]

SUB CODE: 06/ SUBM DATE: none

Card 1/1

UDC: 576.858.25.093.3

GORSHKOV, M.I.; ZINOV'YEV, V.R.; TOPLIN, A.I.; USHERENKO, Z.I.

Cutting surfaced veneer with planer saws. Der.prom. 5 no.8:3-4  
Ag '56. (MLRA 9:10)  
(Veneers and veneering) (Planing machines)

TOPLIN, Ye.K.; BARTENEV, F.I.

Latent resources of socialist agriculture in Stalingrad Province.  
(MIRA 11:6)  
Zemledelie 6 no.6:65-68 Je '58.

1. Stalingradskoye oblastnoye upravleniye sel'skogo khozyaystva.  
(Stalingrad Province--Field crops )

PA 4745

TOPLIVA, A. M.

Apr 1947

USSR/Fuels - Analysis  
Coal  
Furnaces

"Results of an Investigation of Stratified Combustion of Lignites on an Inclined Grate," D. G. Fayershteyn, A. M. Topliva, 6 pp

"Za Ekonomiyu Topliva" Vol IV, No 4

Gives full description with cross sections of boiler and furnace with which the grate is used. Graph of the coefficient of effective operation of the furnace and tables of the operating characteristics of the furnace with Kirovgrad and Alexandriysk coal.

TOPOL', A., (Engr-Col)

Listed as author of article, "Maintenance of Vehicles in Training Classes," which appears in Tankist, No 5, May 1954. (Sovetskaya Armiya, Group of Soviet Forces, Germany, 25 May 54).

SO: SUM No. 208, 9 Sep 1954

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AUTHOR: Topol, Jan

TITLE: Prospects for the production of magnesium from domestic ores by the ferrosilicon thermal reduction method

PERIODICAL: Hutnické listy, no.1, 1962, 49-52

TEXT: Abundant and easily accessible supplies of dolomite limestone are available in Czechoslovakia. Preliminary investigations have established their suitability for the production of magnesium by the silicon reduction method and the present paper describes a semi-technical production unit. The following individual steps are studied in detail: 1) crushing of the dolomite; 2) roasting; 3) milling and sieving; 4) mixing; 5) production of briquets from roasted dolomite, ferrosilicon and fluorspar; 6) heating under high vacuum and 7) distillation and refining of magnesium. Ad 1) and 3): it was seen that existing conventional machinery could be used successfully. Ad 2): the course of roasting of the dolomite was studied and storage problems of the calcined materials were investigated. Ad 5): this operation is very critical with reference to yields and smooth

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processing. No completely satisfactory method for the production of the briquets is known. Excessive pressures during briquetting reduce the escape of magnesium vapours, lowering the yield and increasing costs. Briquets, on the other hand, are harder and less prone to break during transport. (Low-strength briquets may lower the efficiency of the reduction furnace by as much as 20%.) Briquetting in two stages is suggested. Optimum pressure for a charge consisting of calcined dolomite, 75% ferro-silicon and fluorspar was 1000 to 1100 kg/cm<sup>2</sup>. Ad 6): Reduction furnaces comprised four retorts made of austenitic steel. Retort dimensions: total length, including the 500 mm condenser - 2500 mm; inner diameter - 250 mm; wall thickness - 29 mm. Optimum charge of briquets: 65 kg. The minimum life of the retort is given as 1 year. Thermal reduction was carried out at 1190°C and a vacuum of  $5 \times 10^{-2}$  torr. The effect of varying the Ca/MgO ratio on the course of the reduction and on the Ca-contents in the condensed Mg were investigated: it was found that increasing amounts of CaO, up to a molar ratio 1.5 CaO : 1 MgO, had no effect on the Ca contents of the condensed Mg. Higher quantities of CaO produced a steep increase of Ca in the

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condensate. Raw-material and energy consumption of the pilot plant production unit are tabulated and compared with world average data. Results are practically identical except that the heat consumption was higher (5000 kcal/l kg Mg, as against 4500 kcal). Considerably more favourable results were then obtained by constructing another furnace, heated electrically with graphite rods. Charge: 100 kg of briquets. The following comparative figures for the production of 1 kg Mg are given (kilowatt-hours): world average 20, Czechoslovak pilot plant 12; (reduction time in hours): world average 48, Czechoslovak 7. The purity of the refined metal was 99.9%. Existing raw materials and equipment combined with the experience gained in the pilot plant experiments are a sound basis for the industrial production of magnesium in Czechoslovakia. There are 8 figures, 3 tables and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to an English language publication reads as follows: Ref.3: L.M.Pidgeon, J.A.King. Discussions Faraday, Soc., no.4, 1948, 197-206.

ASSOCIATION: VUK - Panenské Břežany

SUBMITTED: May 20, 1961

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